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Physical planning of on-chip interconnect architectures

Hongyu Chen Bo Yao Feng Zhou Chung-Kuan Cheng Dept. of Comput. Sci. & Eng., Univ. of California, La Jolla, CA, USA

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Abstract

Interconnect architecture plays an important role in determining the throughput of meshe structures. We assume a mesh structure with uniform communication demand for commu commodity flow (MCF) model is proposed to find the throughput for several different routing experimental results reveal several trends: 1. The throughput is limited by the capacity of column in the mesh, simply enlarging the congested channel cannot produce better throu shape provides around 30% throughput improvement over a square chip of equal area. 2 allows 17% throughput improvement over 90-degree mesh and a 90-degree and 45-degre provides 30% throughput improvement, 3. To achieve maximum throughput on a mixed N diagonal interconnect architecture, the best ratio of the capacity for diagonal routing layer for Manhattan routing layers is 5.6. 4. Incorporating a simplified via model, interleaving die and Manhattan routing layer is the best way to organize the wiring directions on different I

Index Terms

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circuit layout CAD system-on-chip

Non-controlled Indexing

congested channel diagonal Interconnect architecture flexible chip shape me meshed communication structures mixed Manhattan Interconnect architecture commodity flow model on-chip interconnect architectures physical planning i <u>via model</u>

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